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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Mats Leijon

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EXAMINER

TAMAI, KARL I

ART UNIT

PAPER NUMBER

2834

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/534,186	Applicant(s) LEIJON ET AL.	
	Examiner KARL I.E. TAMAI	Art Unit 2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7, 12, 15 and 16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 12, 15 and 16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-4 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stevenson et al. (Stevenson)(US 6753619) and Kawamura (US 20020060505) and Aanstoos et al. (High Voltage Stator for a Flywheel Energy Storage System).

Stevenson teaches a power storage system for a hybrid drive vehicle (see figure 1) having a driving system with at least one electric apparatus 14/16 and a power storage 12 having a stator-provided winding 38 and at least one rotor with a magnetic-flux generating permanent magnets 40, where the rotor is connected to a flywheel 30 for

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storage of energy in the form of kinetic energy in at least one rotary mass. The power storage being arranged to transmit power to and from the electric apparatus by the controller 14 (see col. 4, lines 23-45). Stevenson teaches the stator winding 38 is wound to extend in the air gap between the core 36 and the magnet 38 (as shown in figure 3). Stevenson does not teach the stator having a first winding arranged to operate at low voltage and a second winding to operate at high voltage with the first and second windings being arranged to operate independently of each other. Kawamura teaches generators have multiple windings to generate various voltages such as 12-24 V (between 6-50 Volts) for low voltages and 100-200 V for high voltages for different power requirements on a vehicle. Stevenson and Kawamura do not teach the high voltage being greater than 1-24 kV. Aanstoos teaches a high voltage flywheel mobility leveling for tactical vehicles with minimal mass and volume. It would have been obvious to a person of ordinary skill in the electrical generator art at the time of the invention to construct the power system of Stevenson with the low and high power windings transmitting power to and from the motor/generator to meet the various power requirements on a vehicle as taught by Kawamura, where the high voltage is between voltage is below 1.2 kv and 24 kv provide flywheel mobility leveling with minimal mass and volume.

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stevenson et al. (Stevenson)(US 6753619), Kawamura (US 20020060505), and Aanstoos, in further view of Tanaka (US 6172435). Stevenson, Kawamura, and

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Aanstoos teach every aspect of the invention except the rotor having a squirrel cage winding. Tanaka teaches the flux generator device on the rotor can be a squirrel cage 19 or a permanent magnet (col. 5, line 19) to operate as a motor/generator, however the squirrel cage is the preferred embodiment in the high speed flywheel. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the power system of Stevenson, Kawamura, and Aanstoos with magnetic flux generator being a squirrel cage because Tanaka teaches that it is the preferred embodiment in the high speed flywheel and because selection between known equivalents is within the ordinary skill in the art.

5. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stevenson et al. (Stevenson)(US 6753619), Kawamura (US 20020060505), and Aanstoot, in further view of Ueyama et al. (Ueyama)(US 5739609). Stevenson, Kawamura, and Aanstoos teach every aspect of the invention except the rotor flywheel supported by magnetic or sliding bearings. Ueyama teaches a rotor supported by magnetic and sliding bearings to provide high speed rotation of the rotor and safe touchdown bearings for protecting the motor. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the power system of Stevenson, Kawamura, and Aanstoos with magnetic bearings and slide bearings to provide high speed rotation.

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6. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stevenson et al. (Stevenson)(US 6753619), Kawamura (US 20020060505), and Aanstoos, in further view of Leijon (WO 97/45935). Stevenson, Kawamura, and Aanstoos teach every aspect of the invention except one of the windings having of a conductor surrounded by a first semiconducting layer surrounded by a layer of fixed insulation surrounded by a second semiconducting layer. Leijon teaches rotary electric machines operating voltages between 110-20 kv (page 3, line 24) to be used in conjunction with a power station. Leijon teaches that it is known to provide one of the windings 6 (figure 2)(pg. 14, lines 18-27) with a conductor surrounded by a first semiconducting layer 32 surrounded by a layer of fixed insulation 33 surrounded by a second semiconducting layer 34 to provide a generator with high voltage cable with easy assembly (page 12). It would have been obvious to one having ordinary skill in the art at the time the invention was made to construct the power system of Stevenson, Kawamura, and Aanstoos with winding having a conductor surrounded by a first semiconducting layer surrounded by a layer of fixed insulation surrounded by a second semiconducting layer to provide a high voltage winding which is flexible and can allow easy manufacturing, as taught by Leijon.

7. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stevenson et al. (Stevenson)(US 6753619) and Kawamura (US 20020060505) and Aanstoos, in further view of Smith et al. (Smith)(US 6163097). Stevenson and Kawamura, and Aanstoos teach every aspect of the invention except the rotor having a

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first core, second core, and a third core with the first winding of the stator being arranged between said first and second cores and the second winding of the stator being arranged between said second and third cores. Smith teaches the operating voltage can be 480 V. Smith teaches a rotor 15 (see Fig. 3) having a first core 14, second core 14, and a third core 14 with the first winding 100 of the stator being arranged between said first and second cores and the second winding 100 of the stator being arranged between said second and third cores to provide an economical and high powered motor generator. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the power system of Stevenson, Kawamura, and Aanstoos with the rotor having a first core, second core, and a third core with the first winding of the stator being arranged between said first and second cores and the second winding of the stator being arranged between said second and third cores to provide an economical and high powered motor generator.

Response to Arguments

8. Applicant's arguments are moot in view of the new ground of rejection.

Applicant's argument regarding synergy is not persuasive because Kawamura both teaches the synergy of combining multiple stator windings groups to provide high and low voltages in a single apparatus, therefore the synergy is both predictable and expected (see Kawamura, paragraph 0011). The particular voltage of between 1-24 kv is merely a result effective variable that is within the ordinary skill in the art to determining the proper voltage based on the application driven by the voltage, as shown

by Aanstoos. Applicant's arguments that Kawamura is only a generator is not persuasive. Kawamura teaches a permanent magnet rotor electric machine, which it can be a motor or a generators depending on whether a current is provide to or taken from the windings, as taught by Stevenson (col. 4, lines 23-44).

Conclusion

9. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karl I.E. Tamai whose telephone number is (571) 272 - 2036.

The examiner can be normally contacted on Monday through Friday from 8:00 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mrs. Quyen Leung, can be reached at (571) 272 - 8188. The facsimile number for the Group is (571) 273 - 8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Karl I Tamai/
PRIMARY PATENT EXAMINER
August 25, 2009